

 $\textbf{Keywords:} \ \text{multi-port distributed frame buffer, multicomputers, parallel rendering, synchronization}$

Rendering: Rendering time estimation for real-time rendering

Michael Wimmer, Peter Wonka

June 2003 Proceedings of the 14th Eurographics workshop on Rendering EGRW '03

Publisher: Eurographics Association

Full text available: pdf(2.46 MB)

Additional Information: full citation, abstract, references, citings, index

terms

This paper addresses the problem of estimating the rendering time for a real-time simulation. We study different factors that contribute to the rendering time in order to develop a framework for rendering time estimation. Given a viewpoint (or view cell) and a list of potentially visible objects, we propose several algorithms that can give reasonable upper limits for the rendering time on consumer hardware. This paper also discusses several implementation issues and design choices that are neces ...

5 Rendering systems on clusters: Design and implementation of a large-scale hybrid distributed graphics system



Jian Yang, Jiaoying Shi, Zhefan Jin, Hui Zhang

September 2002 Proceedings of the Fourth Eurographics Workshop on Parallel **Graphics and Visualization EGPGV '02**

Publisher: Eurographics Association

Full text available: pdf(237.87 KB)

Additional Information: full citation, abstract, references, citings, index

Although modern graphics hardware has strong capability to render millions of triangles within a second, huge scenes are still unable to be rendered in real-time. Lots of parallel and distributed graphics systems are explored to solve this problem. However none of them is built for large-scale graphics applications. We designed AnyGL, a large-scale hybrid distributed graphics system, which consists of four types of logical nodes, Geometry Distributing Node, Geometry Rendering Node, Image Composit ...

Keywords: geometry compression, global share, image composition, image compression, large-scale cluster rendering, logical timestamp, memory explosion, parallel rendering, remote graphics, tiled displays, virtual graphics

6 Poster session 2: A model-based approach for real-time embedded multimodal





systems in military aircrafts

Rémi Bastide, David Navarre, Philippe Palanque, Amélie Schyn, Pierre Dragicevic October 2004 Proceedings of the 6th international conference on Multimodal interfaces

Publisher: ACM Press

Full text available: pdf(725.28 KB) Additional Information: full citation, abstract, references, index terms

This paper presents the use of a model-based approach for the formal description of realtime embedded multimodal systems. This modeling technique has been used in the field of military fighter aircrafts. The paper presents the formal description techniques, its application on the case study of a multimodal command and control interface for the Rafale aircraft as well as its relationship with architectural model for interactive systems.

Keywords: embedded systems, formal description techniques, model-based approaches

7 A performance evaluation of lock-free synchronization protocols



Anthony LaMarca

August 1994 Proceedings of the thirteenth annual ACM symposium on Principles of distributed computing

Publisher: ACM Press

Full text available: pdf(1.10 MB)

Additional Information: full citation, references, citings, index terms

Synchronization in the MAEstro multimedia authoring environment

George D. Drapeau

September 1993 Proceedings of the first ACM international conference on Multimedia

Publisher: ACM Press

Full text available: pdf(65.56 KB) ps(87.29 KB)

Additional Information: full citation, references, citings, index terms,

review

Facial modeling and animation

Jörg Haber, Demetri Terzopoulos

August 2004 Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04

Publisher: ACM Press

Full text available: pdf(18.15 MB) Additional Information: full citation, abstract

In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s ...

10 A survey and performance analysis of software platforms for interactive cluster-based





multi-screen rendering

Oliver G. Staadt, Justin Walker, Christof Nuber, Bernd Hamann

May 2003 Proceedings of the workshop on Virtual environments 2003 EGVE '03

Publisher: ACM Press

Full text available: pdf(517.37 KB)

Additional Information: full citation, abstract, references, citings, index

We present a survey of different software architectures designed to render on a tiled display. We provide an in-depth analysis of three selected systems, including their implementation of data distribution, sort-first rendering, and overall usability. We use various test cases to analyze the performance of these three systems.

11 The RACE II engine for real-time volume rendering



Harvey Ray, Deborah Silver

August 2000 Proceedings of the ACM SIGGRAPH/EUROGRAPHICS workshop on **Graphics hardware**

Publisher: ACM Press

Full text available: 🔂 pdf(785.19 KB)

Additional Information: full citation, abstract, references, citings, index terms

In this paper, we present the RACE II Engine, which uses a hybrid volume rendering methodology that combines algorithmic and hardware acceleration to maximize ray casting performance relative the total amount of volume memory throughput contained in the system. The challenge for future volume rendering accelerators will be the ability to process higher resolution datasets at over 10Hz without utilizing large-scale, and therefore, expensive designs. The limiting performance ...

12 Light fields: Towards space: time light field rendering Huamin Wang, Ruigang Yang





April 2005 Proceedings of the 2005 symposium on Interactive 3D graphics and games

Publisher: ACM Press

Full text available: pdf(2.36 MB) Additional Information: full citation, abstract, references, index terms

So far extending light field rendering to dynamic scenes has been trivially treated as the rendering of static light fields stacked in time. This type of approaches requires input video sequences in strict synchronization and allows only discrete exploration in the temporal domain determined by the capture rate. In this paper we propose a novel framework, space-time light field rendering, which allows continuous exploration of a dynamic scene in both spatial and temporal domain wit ...

Keywords: epipolar constraints, image-based rendering, space-time light field

13 A hybrid hardware-accelerated algorithm for high quality rendering of visual hulls Ming Li, Marcus Magnor, Hans-Peter Seidel

May 2004 Proceedings of the 2004 conference on Graphics interface GI '04

Publisher: Canadian Human-Computer Communications Society

Full text available: pdf(224.31 KB) Additional Information: full citation, abstract, references

In this paper, a novel hybrid algorithm is presented for the fast construction and high-quality rendering of visual hulls. We combine the strengths of two complementary hardware-accelerated approaches: direct *constructive solid geometry* (CSG) rendering and texture mapping-based visual cone trimming. The former approach completely eliminates the aliasing artifacts inherent in the latter, whereas the rapid speed of the latter approach compensates for the performance deficiency of the former ...

Keywords: CSG Rendering, hardware-accelerated rendering, image-based modeling and rendering, texture mapping, visual hull

14 High performance presence-accelerated ray casting

Ming Wan, Arie Kaufman, Steve Bryson

October 1999 Proceedings of the conference on Visualization '99: celebrating ten years

Publisher: IEEE Computer Society Press

Full text available: pdf(449.19 KB)

Additional Information: full citation, abstract, references, citings, index terms

We present a novel presence acceleration for volumetric ray casting. A highly accurate estimation for object presence is obtained by projecting all grid cells associated with the object boundary on the image plane. Memory space and access time are reduced by runlength encoding of the boundary cells, while boundary cell projection time is reduced by exploiting projection templates and multiresolution volumes. Efforts have also been made towards a fast perspective projection as well as inter ...

Keywords: interactive classification, multiresolution volumes, parallel processing, presence acceleration, projection template, run-length encoding, volume rendering

15 <u>Distributed systems: Evaluation of a collaborative volume rendering application in a distributed virtual environment</u>

U. Wössner, J. P. Schulze, S. P. Walz, U. Lang

May 2002 Proceedings of the workshop on Virtual environments 2002 EGVE '02

Publisher: Eurographics Association

Additional Information: full citation, abstract, references, citings, index



Full text available: pdf(3.97 MB)

In this paper, we present a collaborative volume rendering application which can be used in distributed virtual environments. The application allows the users to collaboratively view volumetric data and manipulate the transfer functions. Furthermore, 3D markers can be used to support communication. The collaborative setup includes a full duplex audio channel between the virtual environments. The developed software was evaluated with external users who were asked to solve tasks in two scenarios w ...

16 Interactive multimedia scenario: modeling & rendering

M. Vazirgiannis, I. Stamati, M. Trafalis, M. Hatzopoulos

February 1998 Proceedings of the 1998 ACM symposium on Applied Computing

Publisher: ACM Press

Full text available: pdf(1.26 MB) Additional Information: full citation, references, index terms

Keywords: event detection, event modeling, interactive multimedia presentations, scenario modeling, scenario rendering

17 VC-1: a scalable graphics computer with virtual local frame buffers

Satoshi Nishimura, Tosiyasu L. Kunii

August 1996 Proceedings of the 23rd annual conference on Computer graphics and interactive techniques

Publisher: ACM Press

Full text available: pdf(266.19 KB) Additional Information: full citation, references, citings, index terms

Keywords: demand paging, frame buffers, parallel polygon rendering, scalable

18 Interactive Maximum Projection Volume Rendering

Wolfgang Heidrich, Michael McCool, John Stevens

October 1995 Proceedings of the 6th conference on Visualization '95

Publisher: IEEE Computer Society Full text available: pdf(852.81 KB)

Additional Information: full citation, abstract, citings Publisher Site

Maximum projection is a volume rendering technique that, for each pixel, finds the maximum intensity along a projector. For certain important classes of data, this is an approximation to summation rendering which produces superior visualizations. In this paper we will show how maximum projection rendering with additional depth cues can be implemented using simple affine transformations in object space. This technique can be

used together with 3D graphics libraries and standard graphics hardware, t ...

Keywords: maximum rendering, summation rendering, volume visualization, interactive computer graphics, geometric transformation, hardware accelerated rendering

19 TexMol: Interactive Visual Exploration of Large Flexible Multi-Component Molecular Complexes

Chandrajit Bajaj, Peter Djeu, Vinay Siddavanahalli, Anthony Thane October 2004 Proceedings of the conference on Visualization '04

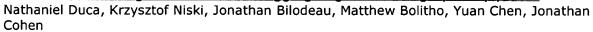
Publisher: IEEE Computer Society

Full text available: pdf(600.82 KB) Additional Information: full citation, abstract

While molecular visualization software has advanced over the years, today, most tools still operate on individual molecular structures with limited facility to manipulate large multi-component complexes. We approach this problem by extending 3D image-based rendering via programmable graphics units, resulting in an order of magnitude speedup over traditional triangle-based rendering. By incorporating a biochemically sensitive level-of-detail hierarchy into our molecular representation, we communi ...

Keywords: molecular visualization, image-based rendering, texture-based rendering, imposter rendering, volume rendering, programmable graphics hardware, level-of-detail, hierarchy, multiresolution, synchronous view, computer graphics

Hardware rendering: A relational debugging engine for the graphics pipeline



July 2005 ACM Transactions on Graphics (TOG), Volume 24 Issue 3

Publisher: ACM Press

Full text available: pdf(582.04 KB) Additional Information: full citation, abstract, references, index terms

We present a new, unified approach to debugging graphics software. We propose a representation of all graphics state over the course of program execution as a relational database, and produce a query-based framework for extracting, manipulating, and visualizing data from all stages of the graphics pipeline. Using an SQL-based query language, the programmer can establish functional relationships among all the data, linking OpenGL state to primitives to vertices to fragments to pixels. Based on th ...

Keywords: SIMD, SQL, debugging, graphics hardware, graphics pipeline, relational algebra, streaming, visualization

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